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A POINT OF VIEW ON THE SCOPE AND WORK OF THE IRRIGATION CONGRESS

By L. H. Bailey

EDITOR'S NOTE.—This paper was delivered by the author before the National Irrigation Congress at Spokane, Wash.

IRRIGATION profoundly affects society and institutions; and any person who is interested in rural civilization must necessarily, therefore, be interested in irrigation.

The best rural civilization will develop out of native rural conditions rather than be imposed from without. Irrigation makes a rural condition. It provides the possibility for a community to develop; and it must, therefore, color the entire life of the community. As the civilization of New England developed about the town-meeting, and that of the South about the Court-house, so will the civilization of irrigation communities develop about the ditch-meeting.

Irrigation communities are compact. As all the people depend on a single utility, so must the community life tend to be solidified and tense. Probably no other rural communities will be so unified and so intent on local social problems. We shall look, therefore, for a very distinct and definite welfare to arise in these communities; and they will make a peculiar contribution to rural civilization.

The life of the irrigation community will be expressed not only in institutions of its own, but in the literature of its own. Much of the world's literature does not have significance to country-life conditions, and very

little of it has significance to an irrigation civilization. I look for poetry to come directly out of the irrigation ditch and to express the outlook of the people who depend for their existence on the canal and the flood-gate. It is most significant of a new feeling in art and literature that we have a national irrigation ode.

THE INTERESTS OF SOCIETY IN THE WORK

The people have made it possible for irrigation-reclamation to be developed; for whether the work is performed by the government directly or by private enterprise, it nevertheless rests on national legislation; and this legislation expresses the consent and the interest of society in the work. All the people have not only a right to an interest in irrigation-reclamation, but they carry an obligation to be interested in it, since it reclaims and utilizes the fundamental heritage of all the people. I take it that society's interest in the work is of two kinds; to see that the land is properly utilized and protected; to see that persons desiring homes shall have an opportunity to secure them. Society is not interested in speculation in land or in mere exploitation.

In the last analysis, land belongs to all the people. No man really owns his land; society allows him to use it, and to say who shall use it when he is

done with it, and every man is under obligation to society to maintain the fertility of his land. Even a farm is not a man's own, in the sense that he has a right to abuse it without check. More than that, he is under obligation to use all the natural resources of the earth with a care for those who are to come after him. No man has a moral or social right to denude the land of its forest, unless he leaves the land in condition for his successors to utilize it with satisfaction. The American practice of rapping the earth of its timber is indefensible not only in economics, but also in moral obligation. In writing this statement, I make no imputation as to whether the fault lies with the timber-man or with society in general.

I hope that the irrigation people realize their obligation to the society which makes it possible for them to develop their irrigation systems. Not every person in the nation agrees to the wisdom of national reclamation, but society has given it a trial. The people in the West are interested in developing their localities and their commonwealths, and in securing settlers to see them; and with this feeling we all must sympathize. The people in the East have a remoter interest, but it is none the less real. I have no fear that the irrigation-settlement of the West will set up disastrous competition in products with the East, as many eastern people anticipate; the areas involved in the new irrigation projects are too small and the development too slow for that. But there is danger that the producing-power of the land may not be safe-guarded, and all the people, East as well as West, must have concern for your use of western land. The very fact that irrigation-farming is intensive, increases the danger. From an agricultural point of view, the greatest weakness in this farming is the fact that the animal, or live-stock, does not occupy a large place in the system. Other systems of maintaining fertility must be developed.

Society has a right to ask that you be careful of your irrigated valleys. They are abounding in riches. It is easy to harvest these riches by the simple magic of water. You will be tempted to waste these riches and the time will come quickly when you will be conscious of their decline. This seems remote to you now, but the danger is real. Not even the fertility of the irrigation waters will maintain the land in the face of poor agricultural practice.

It is the flat valleys of the great arid West that will be opened by irrigation. These valleys are small areas compared with the uplands, the hills, and the unirrigable regions. Society is interested also that you may be careful of your uplands and hills, for in the arid regions they give small yield in forage and in timber; this forage and timber must be most thoughtfully protected. When the producing-power of the irrigated lands begins to decline, you cannot fall back on your dry hills.

I am not contending that irrigation-farming is proceeding in a wasteful way, or that systems are not developing that will protect society; I am calling your attention to the danger and to the interest of all the people in this danger; and I hope that you may profit by the errors of all new settlements thus far made in the history of the world.

We are everywhere in need of better agriculture, not only that every agriculturist may do a better business, but also that agriculture may contribute its full share to the making of a better civilization. Here and there, as we learn how to adapt ourselves to the order of nature, we begin to see a really good agriculture in the process of making. A good agriculture is one that is self-sustaining and self-perpetuating, not only increasing its yields year after year from the same land, but leaving the land better and richer at each generation. This must come to pass from the land itself and from the animals and crops that one naturally brings to the land, and not merely by the addition of mined

fertilizing materials brought from the ends of the earth. Thus far in history, it is only when the virgin fatness begins to be used up, speaking broadly that we put our wits to work. Then the rebound comes. The best agriculture thus far has developed only after we have struck bottom, and we begin a constructive effort rather than an exploitive effort; and this comes in a mature country. This is why so great part of the European agriculture is so much better than our own, and why in old New England such expert and hopeful farming is now beginning to appear. The East is in the epoch of rebound. The East is in the process of becoming more fertile; the West is in the process of becoming less fertile. The Commission on Country Life, in its examination of the whole country, found less complaint of declining fertility in the far Northeastern region, than in any other part of the Union.

In Western North America, the business systems have been developed to great perfection, and the people are possessed of much activity and are so far escaped from tradition that they are able to do things in new ways and to work together. I hope that this great region also will apply at the outset all the resources of business and of science to develop an agriculture that will propagate itself.

A BROAD RECLAMATION MOVEMENT

When all the lands are taken that can be developed or reclaimed by private resources, there remain vast areas that require the larger powers, and perhaps even the larger funds of society (or the government) to bring into utilization. One class of lands can be utilized by means of irrigation. This form of land-reclamation is much in the public mind, and great progress has been made in it. There remain, however, other lands to be reclaimed by other means. There is much more land to be reclaimed by the removal of water than by the addition of water. There are many more acres to be adapted to productive uses by forest planting and conserva-

tion than by irrigation. There are vastly larger areas waiting reclamation by the so-called "dry-farming" (that is, by moisture-saving farming completely adapted to dry regions). And all the land in all the states must be reclaimed by better farming. I am making these statements in no disparagement of irrigation, but in order to indicate the relation of irrigation to what should be a recognized national reclamation movement.

But even though we should recognize a national reclamation movement to include all these phases and others, it may not be necessary or advisable in the interest of all the people, that every last acre in the national domain be opened for exploitation or settlement in this decade or even in this century. The nation may well have untouched reserves. No one knows what our necessities will be a hundred years hence. Land that has never been despoiled will be immeasurably more valuable to society then than now; and society holds the larger interest.

When the pressure of population comes, we shall fall back on our reserves. The rain-belt states will fall back on their wet lands, their uplands, and their hills. These hills are much more usable than those of the arid and semi-arid West can ever be. The eastern and old southern states have immense reserves, even though the titles may be largely in private ownership. New York is still nearly half in woods and swamps and waste, but practically all of it is usable. New York is an undeveloped country, agriculturally. The same is true of New England and Pennsylvania and great regions southwards. Forests and sward grow profusely to the summits of the mountains and hills. Vast acres eastward are undeveloped and unexploited. Even the regions of the so-called "abandoned farms" are yet practically untouched of their potential wealth. I have no regret that these countries are still unsettled. There is no need of haste. When the great arid West has brought every one of its available acres into ir-

rigation and when population increases, the eastern quarter of the country will take up the slack. It is by no means inconceivable that at that time the eastern lands, newly awakened from the sleep of a century, will be the fresh lands, and the older regions will again become the new regions.

SUPPLEMENTAL IRRIGATION

Let me say that irrigation is properly not a practice of arid countries alone. Irrigation is of two purposes,—to reclaim land and make it usable; to mitigate the drought in rain fall regions. As yet the popular imagination runs only to reclamation-irrigation. This form of irrigation is properly regulated by the federal government.

Now and then a fore-handed farmer in the humid region, growing high-class crops, installs an irrigation plant to carry him through the dry spells. As our agriculture becomes more developed, we shall greatly extend this practice. We shall find that even in humid countries we cannot afford to lose the rain-fall from hills and in

floods, and we still hold at least some of it against the time of drought as well as for cities and for power. We have not yet learned how to irrigate in humid regions, for the practice of drainage is equally involved; but we certainly shall apply water as well as manures to supplement the usual agricultural practices. This Congress devotes its attention to reclamation-irrigation; may it not properly devote some of its effort to supplemental irrigation?

THE CONCLUSION

Now, inasmuch as irrigation-reclamation is a national enterprise and depends for its development on the will of all the people, as it is one part in a much larger plan for the utilization of land, as irrigation is properly a practice for humid regions as well as for arid regions, and as the people in all parts of the country have a right to ask for information, I submit that it is not only wise but that it is the obligation of this Congress to hold sessions in the East as well as in the West. The West cannot live to itself alone; and the East needs the West.

THE NATIONAL IRRIGATION CONGRESS

THE week of August 9 to 14 was a momentous one, not only for Spokane, Wash., but for the entire United States as well. On those dates, the most influential unofficial body of men in the country assembled to discuss a subject which is of immense importance to the people of today and to the agriculture of tomorrow. Their ideas were directed toward these four cardinal objects: Reclamation of the deserts; conservation of the water supply; preservation of our great national forests; and the making of homes on the land. What these men are thinking about, working over and accomplishing now, will largely determine to what extent this country can sustain the millions of inhabitants which are bound to augment the number of its present population.

To quote from a recent issue of the *Inland Observer*: "The magnitude of the enterprise can be better understood when it is stated that this congress represents private irrigation enterprises that have already put 10,000,000 acres of arid land under the plow, and government projects that have put 3,000,000 acres under cultivation. In addition, the congress represents the future undertakings that will reclaim the remaining 50,000 000 acres of arid land and 80,000,000 acres of swamp land."

It is not our purpose here to give an extended report of the congress. That would be a matter of some 500,000 words. The public will have it shortly, however, as it will be issued very soon in the proceedings of the organization. There were a few speeches which we believe will be of

special interest to the readers of THE COUNTRYMAN. One of these, by Dean Bailey, appears elsewhere in this issue. There follow points from three other addresses which we would like to emphasize.

Dr. A. C. True, Director of the Office of Experiment Stations, U. S. Dept.



BENJAMIN A. FOWLER

Phoenix, Arizona.

President of the 18th National Irrigation Congress to meet at Pueblo, Colorado, in September, 1910.

of Agr., in his address on, "The Scope and Purpose of the Irrigation Investigations of The Experiment Stations," said in part as follows:

"The act making appropriations for the irrigation work carried on by our office provides for studies along three general lines:

(1) To investigate and report upon the laws of the States and territories as affecting irrigation, and the institutions relating to irrigation.

(2) Upon the use of irrigation waters, at home and abroad, with especial suggestions of the best methods for the utilization of irrigation waters in agriculture, and

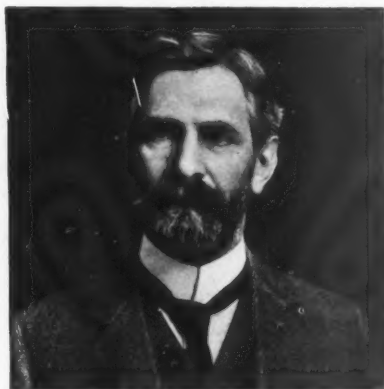
(3) Upon the use of different kinds of power and appliances for irrigation.

"To get started along the first of these lines, a conference of prominent men interested in the development of the West was called. It was decided

that the condition of the water laws was so chaotic that the investigation of their operation was most needed. This was made the leading line of the work, and general principles were advocated, upon which most of the states concerned have based their new system of water laws.

"At present, the greatest need is along the second line. The increase in area under ditch has outrun the increase in population. Farmers from humid regions are needed. They are suspicious of advertisements, are uninformed as to the conditions. Our department has answered in detail many personal questions; it has published a series of bulletins presenting information on irrigated lands in the West, and another series describing the best farm practices on irrigated lands.

"The work along the third line relates primarily to pumping. Pumping will become more and more common as gravity supplies become more



R. INSINGER

Chairman of Board of Governors and Executive Committee, 18th National Irrigation Congress.

difficult to acquire. Our department is working along two lines in this connection:

(1) Studies of present practice and the supplying of practical information; and (2) technical studies for the pur-

pose of working out improvements in pumping machinery.

"Our work is not confined to the arid regions. We are conducting experiments and collecting data to determine the possibilities of irrigation on the Great Plains, where water must be pumped from wells or secured by storing local runoff.

"There is no question as to the value of irrigation in the extreme east on truck crops. There we are working out cheaper and better methods, and are attempting to secure their adoption."

F. H. Newell, Director of the U. S. Reclamation Service in his address on, "The National Irrigation Situation" dealt principally with the law known as the reclamation act signed by President Roosevelt on June 17, 1902. He said in part: "To use a well-worn phrase, its object is to put 'the landless man on the manless land.' Under its seven years of operation, irrigation works have been built in thirteen western states and two territories by which nearly 700,000 acres have already been brought under irrigation. The fund is derived from the proceeds of the disposal of public lands acquired a century or less ago and which have been considered almost valueless. These funds are expended in the construction of reservoirs and canals, the water from which is sold at a rate sufficient to repay the cost and to maintain the fund undiminished.

"The nation is concerned in this work, not only because of the resulting internal development, but also because of the improvement in citizenship and in stability of American institutions. The nomadic herdsman, the restless miner, and the wandering laborer add little to the strength or safety of the community, but let one of these men own a small farm which is sufficiently productive to furnish his family with needed subsistence and comforts, and he becomes a citizen who can be depended upon, in season and out of season, to preserve those institutions which we most highly prize.

"Private capital has also made great advances and possibly at present has five or ten times as large an investment in building irrigation works as is being invested by the Government. Much of this investment has been made possible, or at least, stimulated by the Government work.

"The Government has laid out systems which will ultimately involve the reclamation of several million acres. The works now in hand will require all of the reclamation fund for several years. Each large work has numerous divisions, each of which requires considerable more money for completion."

Mr. E. B. Kientz of Niles, California delivered a very interesting address on "Irrigation by Deep Well Pumping." We quote from this speech because of the fact that the impression is prevalent here in the east, that irrigation is only practicable where there are numerous facilities for gravity systems. In speaking of the pump he said in part as follows: "The ordinary type of double, deep-well, plunger, pump was found to be impracticable for irrigation work because each bucket completed its stroke at the instant the other commenced and both were on the dead center at the same time, causing a stoppage in the upward flow of the water and the necessity of starting the long water column from rest twice on each revolution of the pump, and that both clappers must close under full pressure of the water column. These caused a heavy shock on the moving parts and not only shortened the life of the pump, but wasted a large part of the useful power applied. To overcome these obstacles a type of pump was designed since known as the double-plunger, continuous-flow, deep-well, pump. This type keeps the water column in constant motion upwards. This is accomplished by a patented two sets of eccentric gearing in each powerhead, each bucket in the cylinder in the well being connected to the crankpin of a gear by steel rods. Each gear is on a separate shaft, independent of each other, and driven by a long double

eccentric pinion. Both pinions are keyed fast to the same pinion shaft. Uniform revolution of the pinion shaft produces uniform upward motion of the buckets, but the down stroke is made in less time than the up-stroke.

"As the upper bucket carries the load up, the lower bucket, with clapper wide open, travels down at a higher speed, passes the lower dead center and travels part of the upstroke before the upper bucket has passed the upper dead center. As the lower bucket rises, it reaches a point where its speed is exactly equal to the speed off the upper bucket, when the lower clapper closes and the lower bucket takes the load. In this way the burden of the water column is taken by

the lower bucket when they are both traveling at the same speed; and it follows that the load is taken without shock.

"The wells should be bored large for two reasons: First, it gives more area for the water to get into the well; second, a larger cylinder can be used which will deliver a greater amount of water.

"I do not know that I could do better than to explain what deep well pumping has done for California. Land in that state sold at \$5 to \$8, eight or ten years ago; it is now selling at \$150 and \$200 per acre, due to the fact that they know by boring wells and installing deep well pumps, their water supply is assured and their land made valuable and productive."

AN IRRIGATION EXPERIMENT IN NEW YORK STATE

By F. L. Lamson

Registrar of the University of Rochester.

ON AUGUST 12th a Fairbanks Morse 12 Horse Power verticle type gas engine and Gould centrifugal pump with a 4 inch intake was installed on the shore of Lake Ontario at the edge of an eight acre peach orchard on my farm in the town of Williamson, Wayne County, N. Y. From the pump to the highest point in the orchard, a head of about 20 ft., I laid a 4 in. galvanized iron pipe in 20 foot sections, which cost 7 cents a running foot. At the high point of the orchard a pool was dug about 18 inches deep and about 10 feet in diameter. From this pool ditches were run across the orchard and from these ditches other ditches were made along the rows of peach trees two feet from the trunks of the trees. All these ditches were made with a single horse and light plow. The water was then pumped into the pool and allowed to run out into the ditches. As soon as the water reached the lower end of the ditches small dams were made about 6 feet from each tree, allowing

the water to overflow around the roots of the trees, these dams being made



AN IRRIGATED PEACH TREE, IN THE HIGHEST AND DRIEST PART OF THE ORCHARD.



THE ENGINE, PUMP, AND INTAKE FROM LAKE ONTARIO.

by a man with a hoe. This work once done, the engine was run from one to two hours every other day, each time until the water had reached the furthestmost trees; one man with a hoe was able to control the flow of water so that each tree received an amount to moisten the ground sufficiently and yet not to flood it. This plan has been continued until the present time, September 13. The amount of gasoline required for the pumping during this period of time has been 37 gallons. The cost for labor has been the services of two men for a total of five days.

In order to determine the effect of the water on the fruit and trees, forty trees at different places in the orchard have not been irrigated. The results of the experiment as indicated at the present time are: that the peaches on the irrigated trees are from $\frac{1}{3}$ to $\frac{1}{2}$ larger than the peaches on the trees that have not been irrigated; the peaches on the irrigated trees have a richer color; the new wood on the trees is more mature; the foliage a much darker and richer green; and, although the peaches are just ripening, the

flavor of the irrigated peaches is superior to that of the unirrigated peaches. Experienced fruit men in the vicinity of Williamson have visited the orchard and pronounced the experiment highly successful and uniformly express surprise that such a marked difference could be produced by irrigation in view of the fact that the experiment was begun so late in the season. Commission men examining the orchard offered 50 cents a bushel more for the peaches on the irrigated trees than on the trees that have not been irrigated.

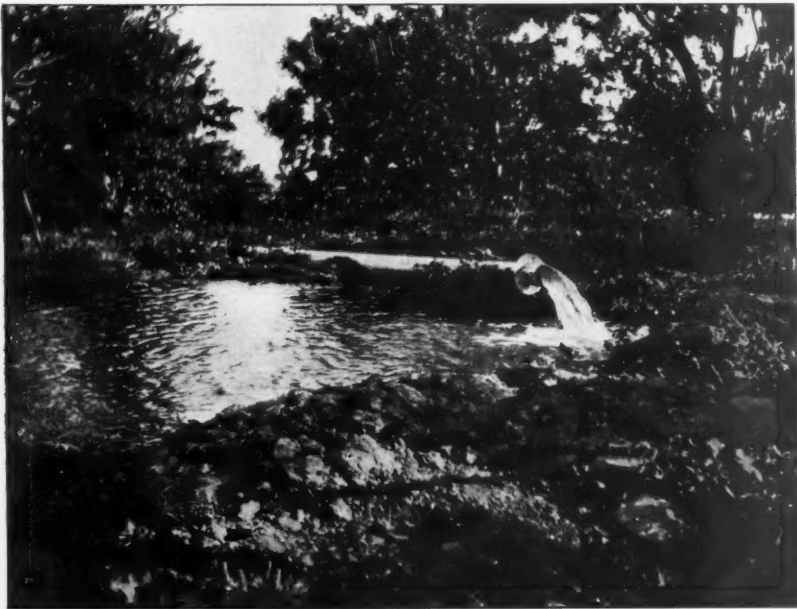
It is the plan to carry on this experiment for three years, and another year every field on the farm (a farm of 100 acres) will be irrigated to determine the effect of irrigation on field crops and orchards, both on young trees and bearing trees. It is believed that by proper irrigation young peach trees can be brought into bearing at least one year earlier than they otherwise do, that bearing trees can be made to produce highly colored and fully developed fruit, and that field crops can be uniformly assured, thereby materially increasing the

value of all farming lands. If the results of the experiment for the next three years are as highly satisfactory as they promise to be, and have been thus far, there can be but one conclusion and that is that the farming interests of the State of New York will demand that the government of the State make it possible for every farmer in the State to irrigate his lands. On account of the droughts during the present season the losses to farmers in the vicinity of Rochester would more than pay for the equipment of all the fire companies and the maintenance of all the fire departments of Rochester for a whole year. No city at the present time would think of doing without fire protection, that is without maintaining thoroughly well equipped and efficient fire companies, and yet the State of New York loses more by the burning up of crops on farms by drought than is lost by all the fires in all the cities within its boundaries, and the present experi-

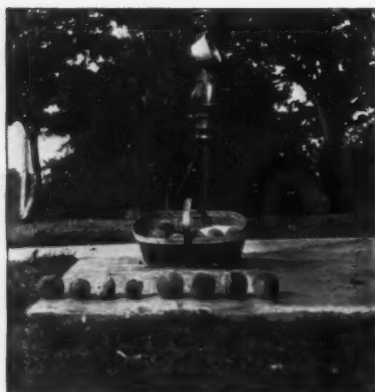
ment is intended to convince the people of the State of the necessity of insuring against such enormous losses.

A plan that seems feasible is for the State to lay the necessary pipes and provide the necessary reservoirs for the storing and distribution of the water, and then to arrange with the various power companies throughout the State for the necessary power to pump the water to the distributing points.

To illustrate, the Rochester Railway and Light Company is obliged to maintain about 30,000 horse power of generating apparatus, 10,000 horse power of which is practically idle from April 1st to October 15th of each year, but this excess of power must be provided in order to supply current during the winter months when the lighting and power loads overlap. This surplus apparatus could be utilized through the summer months for the generation of power for pumping



THE RESERVOIR POOL AND THE 4-INCH INTAKE EMPTYING INTO IT.



IRRIGATION VS. NON-IRRIGATION.
IRRIGATED PEACHES ON THE RIGHT.

purposes, with practically no expense except that for coal and attendants.

Throughout the year, both in summer and winter, there is a period from 11 o'clock at night until 7 o'clock in the morning, when more than 8,000 horse power additional would be available, making a total at such times of 18,000 horse power which would be available for the generation of current to be used for irrigation purposes.

All the machinery used for pumping requires little or no attention and the power for irrigation could be used to advantage and at extremely low prices between the hours mentioned. The conditions which obtain in Rochester are coincident with all the larger centers throughout the State.

THE POSSIBILITIES OF ELECTRICITY AS POWER FOR IRRIGATION PURPOSES

By H. Russell

EDITOR'S NOTE.—Mr. Russell was appointed by Mayor Edgerton, Rochester, N. Y., as delegate from that city to the National Irrigation Congress held at Spokane, Wash. Aug. 9-14.

MUCH of the irrigating water in the Western States is now being pumped by means of electric power, and much of the future work must be dependent upon pumping systems. In many localities the electric companies are selling more power for irrigation work than for all other purposes, and a great many power plants have been and are being erected in favorable positions, whose total output will be used for irrigation. At Wenatchee, Washington, the Power Company is selling more power to the farmers for irrigation and general farm use than is being consumed in the city. Indeed, so heavy is this load that owing to a temporary lack of sufficient generating capacity the irrigating pumps must operate during the day only, and be shut down at night when the lighting load goes on. This company generates by water power, and is arranging now to receive additional power from a

larger water power plant further down the river.

Near Garden City, Kansas, the United States Government has installed an immense pumping plant that irrigates some ten thousand acres in Finney County. The water source here is from deep wells, varying from thirty to sixty feet in depth. The plant consists of one large central power plant, and twenty-three sub-stations, operated electrically. Each sub-station has ten wells, fifteen inches in diameter, and the water is pumped by centrifugal pumps. The water is conveyed by concrete flume over four miles in length to the farmers' canals and ditches. The farmers have organized a Water Users' Association, which pays the government a fixed sum every year until the government is reimbursed, when the plant becomes the property of the farmers.

It is interesting to note that this great electric pumping irrigation sys-

tem is used in Kansas, a State where the summer rainfall varies from 16 to 30 inches, and where, up to a few years ago, irrigation was not considered necessary. Also, that the water is used almost entirely for field crops, the principal ones being alfalfa and sugar beets, where the profits per acre will average about \$30.00 to \$40.00. Obviously, the cost of irrigation per acre to the farmer cannot be high, and the Government Reports for 1908 show this to be about \$2.75 per acre. This plant cost \$350,000.00 and is being purchased by the owners of the land at a rate of \$3.50 per acre per year.

The Hanford Irrigation & Power Company, of Seattle, Wash., at an expenditure of more than \$500,000.00, have completed an immense power and pumping plant located at Priest Rapids, on the Columbia River. Electricity is generated by means of water power taken from the Columbia River. This electric power is transmitted sixteen miles down the river by high tension lines to the pumping plant, which in turn takes its water supply from this same Columbia River. Note the interesting features—using the river's power for generating electric current, returning the water to the river, transmitting this power to a point further down the river where suitable farming lands are located, and again taking water from the river by pumps to irrigate the land. A river made to lift itself by means of a small copper wire! This plant at present is 3,000 horse power capacity, and waters about 12,000 acres.

At Williston, North Dakota, the Government has another immense electric pumping installation, which will eventually supply water for 40,000 acres. The water is taken from the Missouri River, and, owing to the shifting formation of the banks, the huge pumps used in the project are located upon floating barges anchored in the river. These pumps are run by electricity generated at several power plants upon the shore, the fuel used being a lignite coal found near by.

The maintenance charge, that is, the annual water charge to users, is as follows: 70 cents per acre whether water is used or not, and 50 cents for each foot pumped and delivered within any year. The rainfall here is 15 inches, almost all from April to September, which is about three-quarters of that in Western New York during the same months. Crops grown are entirely field crops.

Did space permit many interesting examples in Oregon, California, Montana, Wyoming, Colorado, Idaho, Texas, and other States could be cited. It is plain to one who has observed and studied the development of irrigation in the West that much of the future irrigation work must be done with the aid of pumping. Suitable gravity systems have been quickly seized and developed to their practical limits, and the combination of natural conditions that go to insure the successful gravity system, such as sufficient supply of water at suitable elevation, within approachable distance of good farming lands, is at best very limited, and most of these have been or are already being developed. In many cases a pumping plant can be installed and operated cheaper than the interest and maintenance on a very long and expensive gravity system.

The examples cited above of large irrigation projects made possible by means of electric pumping will convince the intelligent reader that the use of electric power for irrigating purposes is both feasible and cheap.

So much for what has been accomplished. We come, then, to the question, Should irrigation be practiced on an extended scale in the East? To an affirmative answer of this question there are two classes of objectors. First: Those who say—"Irrigation isn't needed in the East, the rainfall is ample if proper farming methods are employed"; and second, those who say—"The cost of irrigating in the East will not justify its extended use." The first class are usually those who have not lived on the farm; those who have not stood helplessly by and seen all their efforts go to

waste and ruin by a long protracted drought. I cannot remember a summer in the East when at *some time* during the growing season farm crops have not suffered from want of water. Sometimes the damage has been partial, sometimes total. It should be plainly evident that the farms *do* need irrigation. If a man's barn is on fire his neighbors rush in with pails and buckets to put out the fire, but when a man's farm burns up for lack of water, we, in the East, stand idly by and anxiously watch the clouds, looking to the heavens for relief. Cities spend millions for fire protection. Why not spend something to protect our farms?

Now, replying to the second class of objectors. Can this water be supplied to the farms of the East in sufficient quantity and at such times as needed at a cost that will not outweigh the increased returns to be derived from its application? It is the writer's opinion that this can now be done very extensively in all of the Eastern States, and that, as time goes on and conditions improve, regions now not practically accessible will also come within the range of possibility, just as in the West at present, lands once thought not possible of irrigation are now receiving water. This opinion is based upon the following facts and reasons:

FIRST: Government experiments and tests made on many Eastern farms have amply demonstrated that irrigation of truck farms, meadows, and small fruits, as practiced by many individual growers, has been a financial success, and this in spite of expensive methods and lack of knowledge on the irrigator's part. I would refer the reader to the various Government Bulletins on this subject, especially Nos. 167, 148, and 87, published by the United States Department of Agriculture.

SECOND: That the increased returns to be had from the land by irrigation will justify the very much higher cost for water per acre per year than is commonly supposed possible. Fruit orchards commonly return even in the East under present conditions \$200.00 to \$1,000.00 per acre. With such values taken from the land no grower can afford to risk partial or total damage to his crop for lack of sufficient water. In such cases water at \$50.00 or \$100.00 per acre per year would be cheap.

As regards the power cost. Electric power used for irrigating purposes in the West costs from two to three and one-half cents per kilowatt hour, and there is usually added a fixed charge per month of about fifty cents per horse power for readiness-to-serve. An article published in the May, 1909, issue of the *Irrigation Age* gives some interesting facts and figures relative to the cost of electric pumping for irrigation. It is there shown that the costs per acre foot per year for power are dependent upon the price of electric current, the head against which the water is pumped, and the mechanical efficiency of the installation. For example, with electricity at three cents per kilowatt hour, costs per acre foot per year vary from 25 cents to \$2.50, depending upon the head pumped against. To estimate the cost to the irrigator there must be added maintenance, operation, and fixed charges, and it is found that the cost of irrigation by means of electric pumping in the West varies from two to ten dollars per acre. The cost of irrigation by the gravity system, both government and private, runs from 50 cents to \$2.00 per acre per year. Certainly these costs are in no way prohibitive, and *can* be duplicated in the Eastern States.

A WORKING, EASTERN, IRRIGATION SYSTEM

By N. R. Peet, '10

"Water, water, everywhere,
And all the boards did shrink:
Water, water, everywhere,
Nor any drop to drink.

If plants talk, this is probably what they have said many times, just as despairingly, and how much more uselessly than did the Ancient Mariner.

There are some farmers who have been keeping their eyes pretty closely

that they may enjoy as pleasant and profitable an afternoon as the writer did one day last summer.

Mr. Titus has for several years been watching his garden crops. He has seen his cauliflower plants wither and die, (he has planted them in three and four times some seasons), he has seen his early potatoes go *sometimes* as high as 50 bushels to the acre; has seen his carrots, onions, beets and let-



THE POOL WHERE MR. TITUS GETS THE WATER WHICH MAKES HIS SUMMER CROPS.
SUCH A POND IS A PSYCHIC AS WELL AS FINANCIAL ADDITION TO ANY PLACE.

fixed on the uselessness of this condition; it is to one of these men that I wish to call your attention.

To the north and east of Rochester, N. Y., lies the township of Irondequoit. The farms there are small and are, for the most part, devoted to trucking. On one of the farms lives one Dell Titus, whose name I mention became in that section, he is a pioneer irrigator, and also, if any other of the readers of this article happen to be in that vicinity,

tuces refuse to grow; and he has noticed that all these misfortunes happen in a "dry spell." He has remembered such things and thought about them in the winter, as he looked through his greenhouses and saw the lettuce and the tomatoes responding so readily to the regular applications of water. And then when the drought came, he remembered these winter crops, (as one would be apt to remember out-of-season crops, five acres of them, and



THE POWER HOUSE. BY MEANS OF THIS, THE BEAUTY OF THE LAKE IS TRANSFORMED INTO LUXURIANT CROPS.

every one successful), and the water that had made them possible.

This constant series of disappointments in summer crops, egged on by the knowledge of what was the matter, would be enough thinking to keep most men busy. But not so with Mr. Titus; with one hand on his pocket-book lined by his successful winter crops, and with the other constantly writing checks to pay for his unsuccessful summer crops, he kept his two eyes on a sink hole in one corner of his farm, which was usually fielded with frogs and some water, and which always had been an excellent breeding place for mosquitoes, and which continuously rendered a couple of acres useless for cultivation. He looked it all over and came to the conclusion, "I will water those crops." He has now a complete spray-irrigation system, as simple as it is successful, and as independent as most city water-works.

Let us look again at his conditions; brown-sugar sand, which is $8\frac{1}{2}$ feet deep underlain with quicksand, and whose fertility is almost in exact proportion to the amount of water and manure applied to it; excellent location for market gardening and a desire

to remain there; an almost invariable recurrence of drought and consequent loss in crops; a pool close to hand fed by a few springs; and a determination to save those crops.

What did he do? He first dammed up the outlet of the hole so that he has now a small lake which makes his home more attractive and his farm more productive. He then built on the shore of this pond a cement engine and pumping house and in it he has installed a 20 h. p. gasoline engine, whose faithful chug-chug gives the place an air of industry and thrift. The engine runs a triplex pump which has a capacity of 350 gallons per minute. A line of 2 foot tile runs on a level from the center of the pond, four feet beneath the normal surface into his engine house where it makes a right angle and comes up safely higher than the level of the pond. This gives him a good, well-like intake.

The water is pumped into the Skinner System of distribution, being substantially a series of overhead pipes, spraying directly through holes or nozzles in these pipes. The area under outside irrigation is about nine acres in extent and lies in one solid, oblong chunk. The water leaves the

pump house in a 6-inch iron pipe underground. This pipe runs through the middle, lengthwise of the place. At intervals of about 60 ft. this main is tapped by an upright galvanized iron, 2-inch pipe about 8 ft. long. The tops of these are connected with pipes parallel to the surface of the ground. These latter, twenty-two in number, are each about 275 ft. long and each is made up of three equal sections, each section being a different sized pipe in order to maintain pressure at the farther end; the section nearest the upright is of $1\frac{1}{2}$ inch pipe, the middle section of $1\frac{1}{4}$ inch, and the last of 1 inch pipe. The openings occur along these pipes at intervals of 4 ft.

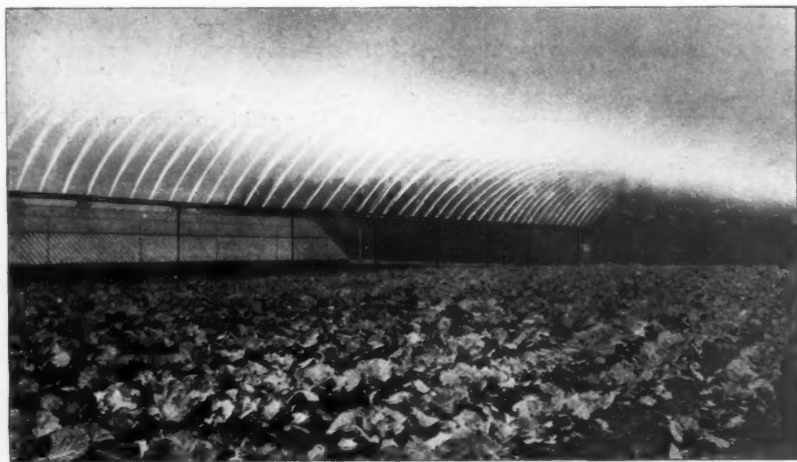
The feature of the system is that the whole 275 ft. of pipe can be rotated so that, the holes being in line, the water can be sprayed first to one side and then to the other of the line of pipe. With a pressure of 60 lbs. the water is forced 30 ft. so that by turning the pipe each line can be made to cover a 60 ft. strip. The water is spread entirely by the air; this idea of spreading is surprisingly successful, for the thread of water, clean cut and strong as it leaves the pipe, goes com-

pletely into a mist, so entirely disseminated that it doesn't even come down in drops, and it covers everything.

During the dry summer weather, Mr. Titus irrigates twice or three times a week according as the weather is cloudy or bright. By means of the stopcocks at the top of each upright, a man can turn on three or four lines and after they have run for about fifteen minutes, he rotates each one a little, making about six twists to cover the ground on each side.

Mr. Titus also has his five acres of greenhouse piped so that he can water his winter crops without the use of the proverbial hose. The nozzles in this case are fixed so that a spray is thrown by them instead of by pressure and air friction; the same kind of a mist is secured, however.

Does this pay? It would seem so on this kind of soil and for these kind of crops. It took two men two months to install it and the total cost was about \$3,500.00. Mr. Titus told the author that he was netting 20% this year on his investment and that he didn't have any shares for sale. It looks like a paying proposition, doesn't it?



THE SPRAY MAKING A SUCCESS OF THIS CROP OF CABBAGES.

(Note the hedge in back ground; evergreens make a better windbreak than board fences. The latter by making a complete barrier forces the wind to scoop down between them; while the former lets enough air sift through to prevent this scooping.)

WHAT HAS BEEN ACCOMPLISHED DURING THE SUMMER OF 1909 IN THE COLLEGE OF AGRICULTURE

Reported by R. D. Anthony, '10

WE are so accustomed to the vacation time that when we leave college in June we think of the faculty as packing up and going off to the lakes and mountains for a well earned rest. This, however, is not the case. This institution is not only a college but it is also an experiment station and so each professor is both a teacher and an experimenter. That only a few of the departments have been reported is no indication that the others have not been busy. For one reason or another it has been impossible to secure notes from several of the departments whose work has been most interesting.

Extension Department. This being the only College that has been doing business throughout the summer, the corridors have been well filled with visitors at most times. This department has acted as a sort of reception committee for these. In addition, an inspection of the buildings was arranged for the summer students just before they left and four grange picnics and family reunions have been held here.

The extension's staff had charge of the agricultural school at Chautauqua during July and also ran a very successful "country life week" there in co-operation with the State Department of Agriculture.

Arrangements have been made for exhibits at fairs throughout the state and from one to five departments have been represented at the following places: Wellsville, Trumansburg, Genoa, Ithaca and Delhi. Prof. Tuck has had charge of the College exhibits at the state fair where practically every department has been represented. This year an entire hall in the new state institution's building was given to the College.

Soils Department.—The task of getting soil surveys of the entire state will be advanced by two counties as a result of this summer's work. Washington County, comprising an area of 80 square miles, was completed in August and Ontario County of over 650 square miles will be finished by November first.

This work is being done in co-operation with the Bureau of Soils of the U. S. Department of Agriculture. Mr. G. H. Crabb and Mr. M. E. Carr have been representing the Bureau while D. W. Hallock, '09, and V. J. Frost, '10, have been on the work for the college.

Prof. Fippin, himself, has spent most of the summer doing reconnaissance work on a motor cycle; he has covered 1,000 miles by road and 500 miles by train in Chautauqua, Cattaraugus, Erie and Alleghany counties. This work has been undertaken in order to get a broader knowledge of the soil conditions of the state and to study the relation of agricultural conditions to these. Considerable attention was paid to swamp and muck areas.

Department of Farm Management.—A farm census similar to that taken in Tompkins County last year and the year before, has been started in Livingston County in the Genesee valley and five townships have been completed. Kutschback, Fisk, Scoville and Johnson, all of '10, have been doing this work under the direction of K. C. Livermore, '09.

In the office the tabulations of the Tompkins County survey have been completed and it is hoped that this can be published as a bulletin by December.

Dr. White has spent the summer studying pastures throughout the

state. He has also started several experiments on pasture seeding, fertilizing, etc. In work of this nature, of course, results can not be secured for some years.

Dairy Department.—The simple statement that this department has made over 1,200 pounds of butter and from 400 to 700 pounds of cheese per day through the summer is sufficient to show that they have been busy.

In addition to this a year's record of 22 herds of cows have been completed, showing the yield of milk and of butter fat, and the cost of feed for over 200 individuals. Some striking results have been obtained and it is hoped that they can be touched upon in a future article in the COUNTRYMAN.

At the college, Mr. Guthrey has carried on an experiment on the efficiency of various separators run under conditions such as would occur in use in creameries. At the east end of the building a 200 foot well has been drilled to furnish cold water for the creamery.

Prof. Stocking has started this summer to keep records of all students who have specialized in his department, in order that both the College and the student may gain by cooperating in this work.

Department of Horticulture.—In floriculture, Prof. Judson and Mr. Brown have been working with the hollyhock, developing new varieties and also studying methods in plant breeding and investigating certain plant diseases.

In Pomology, Prof. Wilson has been growing 80 acres of grapes as a commercial experiment in a vineyard near Romulus, and has also, in connection with the Department of Plant Pathology, been studying the Black Rot of the grape there.

As an aid to the students very complete bibliographies have been made of all the fruits and the cultural operations.

The Pomology farm has been surveyed and a soil map made to facilitate the planning and setting of orchards and vineyards.

Early in the season an experiment was conducted in strawberry varieties

and a number of large growers of strawberries throughout the state were visited and valuable cultural data secured.

Poultry Department.—Here advantage has been taken of the absence of the students to make several experiments. In co-operation with Prof. Cavanaugh, Prof. Rogers has been studying the influence of feeding different color pigments on the development, growth and feathers of chickens and hens.

Miss Nixon and Messrs. Moir and Krum have been testing the efficiency of some different methods of feeding; also cost of incubation and of brooding. At the same time methods of marketing have been investigated.

By placing colony houses out on the athletic field, over 4,000 chickens have been raised this summer. The work of caring for these has been so systematized that a single trip a day with a wagon has been sufficient. The entire work has not taken more than one hour a day.

In several places throughout the state the department has supervised the construction of a new type of colony breeding house, testing it out as to its practicability. Reading Course Bulletin 45, "The Importance of Selecting for Constitutional Vigor in Breeding of Poultry," has been written and printed.

Department of Plant Pathology.—The excessively dry weather has largely prevented the appearance of Black Rot in grapes and Bean Anthracnose. The experiments for the control of these diseases had therefore not yielded as definite results as we had hoped to get.

A few late showers in the vineyard at Romulus, N. Y., gave sufficient infections to demonstrate again the effectiveness of Bordeaux mixture for the control of this disease. The unsprayed check plats show from 7 to 12 per cent. Rot, while sprayed plats are perfectly clean. Commercial Lime Sulphur (Niagara Brand) 1-30 was equally effective in controlling the Rot.

Dr. Reddick who has charge of the Black Rot work is also doing the

Pathological investigation in the Chautauqua Experimental Vineyard at Fredonia. He has the work there organized and has made substantial progress on his investigations of the Necrosis and Black Knot of the grape. Mr. C. N. Jensen who assisted Dr. Reddick on the Black Rot work, has also begun a thorough study of the limb and body cankers of Peach, Plum and Cherry trees. He has isolated the casual organism and reproduced the disease.

Mr. M. F. Barrus has again demonstrated the efficiency of clean pod selection for the control of Bean Anthracnose. He has also made important discoveries as regards the habits of the fungus. He has demonstrated the casual relation of a *Rhizoctonia* to the so-called stem disease so destructive in many bean fields, both this season and last. The practicability of controlling fire blight by cutting out

and disinfecting, has been demonstrated by Mr. Stewart working on nursery stock, and by Mr. Mitchell in a large Bartlett pear orchard.

Mr. W. H. Rankin and Prof. Whetzel, working on the diseases of Ginseng, have completed the work on the Blight and Mildew, two very destructive diseases of this crop. A new root rot of Ginseng has also been discovered and quite thoroughly investigated.

The most important results of the season's work have been obtained by Mr. Wallace. Working with commercial lime sulphur as a summer spray, he has demonstrated its value as a substitute for Bordeaux. He has shown that it is equally effective in controlling apple scab, and has the advantage of not russetting the fruit in the least. It has also shown marked efficiency in the control of Brown Rot of peaches. Mr. Wallace's results are of course subject to next season's tests.

CARE OF THE EYES

By Dr. Geo. M. Gould

I. THE LITTLE BABY'S EYES

THERE are about 50,000 blind persons in the United States, and the sufferings and tragedies of these unfortunates could have been prevented. Think of it! A little care and foresight could have avoided all this misery. In a few cases, of course, powder explosions and other accidents caused the blindness; but even in such cases they were due usually to silly and dangerous Fourth-of-July ways of celebrating, and to carelessness of many kinds in parents and children. But of these 50,000 the big majority are blind because the doctor, the nurse, or the mother did not do his or her duty in caring for the eyes of the newborn baby. In all such cases, usually within a few days after birth, but possibly later, the baby's eyes begin to swell, get red, and run; that is, there is a watery or pus-like discharge from the eyes, and the lids swell so that the eyeballs can scarcely

be seen. This disease has a long, big-sounding name (ophthalmia neonatorum) with the doctors, which means *the eye disease of the baby*. It could have been avoided if the doctor that "borned" the baby, or the midwife, or the nurse, or even the mother, had known what should have been known, and if wise means of prevention had been used when the baby was born. One of the first things to do for the little newcomer, right after birth, is to wash his eyes with a little soft sponge soaked in a warm, weak "antiseptic" wash. (Bichloride of mercury, one part to 3000 parts of distilled or boiled water, is as good as any.) The lids and the corners of the eyes should be softly sponged, and some of the wash squeezed into the eyes, twice a day. This is before any swelling and redness appear. After such redness, swelling, or discharge may appear, the eyes must be treated more frequently; and

the doctor or the nurse must do the work and be held responsible for the treatments. The baby's eyes may be ruined by neglect, such as the common useless and foolish custom of putting in them "breastmilk," applying "tea leaves," weak tea, witch hazel, etc. Such things cannot stop the disease. If the baby's eyes have a discharge-like pus, they can be saved only by thoroughly washing out the insides of the lids very frequently with the antiseptic solution. If possible the doctor should be called to do this. If this solution cannot be gotten at once there should be washing out and "irrigating" all parts of the eyes under the lids with lots of warm water that has been boiled, every hour or two, until the pus stops flowing and the swelling is all gone. Great care must be taken not to injure the eyeball in washing and cleansing. The water or antiseptic wash must be made to reach the deep pockets or parts far up under the upper lids. A little mop may be used, made by wrapping a bit of tiny, smooth stick with absorbent cotton. The greatest care must be

observed that the bits of cotton used in treating the eyes are immediately burned. All dishes, towels, utensils, etc., touched by the "matter" from the eyes must at once be thoroughly boiled and cleansed. The hands of those attending the infant should be scrubbed with soap and hot water both before and after each treatment of the eyes. The "matter" from the eyes must not be allowed to run down the baby's face, and beware of letting any of it reach its mouth or touch the mother's breast. If only one of the baby's eyes is affected, every possible precaution must be used to keep any of the pus from touching the healthy eye. Moreover, the least bit of the infected material transferred to the eye of another person will set up the same disease and might perhaps result in total blindness.

[Preserve each of this series of articles, as they are designed to form a book of service to every person, young or old. Next to life itself the most valuable thing we can have is good vision. These articles are to help you in getting or in keeping such vision. If this number does not interest you, it may interest a friend. And some one of the coming articles may be the means of saving your eyes, health, and happiness.—EDITOR.]

II. CONJUNCTIVITIS

The word "Conjunctivitis" is applied to a great many diseases of the eyes that may or may not have much in common. The terms "Pink Eye," "Red Eye," etc., as used by many people, are often as accurate or as inaccurate. Even physicians frequently mistake the cause or nature of the red or inflamed "white of the eye,"* and call the inflammation conjunctivitis, etc., when the dangerous diseases iritis, or keratitis, are the real ones present. For the nonmedical person and especially for the patient, it makes no difference, what name is given. It does make a great deal of difference, however, whether or not the disease is treated rightly. But just here rises the trouble. If an inflammation of the iris causes the red eye, the eye will almost certainly be ruined if it is treated as if it were only a conjunctivitis. There is conjunctivitis, but it is not the chief trouble, and treating it

alone will not cure it. In all such cases patients must avoid advertised or patent medicines or "eye drops." Advertisements are to benefit the advertisers, and patent medicines are never "patent." Of course the wise and proper thing to do for red eye is to take the patient to the doctor. For although the doctor may sometime make mistakes (only quacks and faith-cure folks make no mistakes), he will make fewer and less expensive ones than patients or parents that say "Let it go," "Put on some tea leaves," "Get some colored glasses," "It's nothing but his eyes," and many such exasperatingly careless and foolish bits of advice. No. When the eyes get red, attend to them at once! Do the best you can. If you can't at first go to or send for the doctor, study, observe, think, read about the disease, and above all be on your guard against neglect that may mean partial or com-

plete blindness, or the failure of an entire life.

The eyes may be red because there is a speck of dust or a "foreign body" in them. They may be red because there is poisonous matter in them; because the insides of the lids have granulations; because of ulcers of the lids; because the cornea is inflamed or hurt; because the iris is inflamed; or because glasses are needed to stop

strain and hurting of the eyes. In the next articles we shall tell more about how to know and how to treat certain of these several different causes of "red eye."

*The conjunctiva is "the skin of the eye" over the so-called "white of the eye." It is a filmy membrane, like the skin of an egg, over the sclerotic coat of the eye. The cornea is the transparent tough membrane like a flexible film of glass in front, over the pupil and iris, set in the sclerotic coat in a way very much like a crystal over the face of a watch. The iris is the window curtain of the eye, or a colored shade. It has a hole in the center, and this hole is called the pupil.

III. HOW TO REMOVE "FOREIGN BODIES" FROM THE EYES

On the train, in every machine shop, foundry, etc., it is constantly happening that people get a bit of dust, sand, cinder, or some other scrap of foreign substance in their eyes. This may not do much harm if let alone, but everybody seems determined to do the eye harm in trying to get the dirt out. In machine shops the person is backed up against the wall, the self-elected "doctor" gets out his knife or takes a pin, and usually succeeds in injuring the eye badly, sometimes ruining it, in awkward attempts to pick out or scratch away the foreign body. One that is not a physician should never be allowed to do this in the manner stated. Never touch the eyeball with a metallic or hard substance. If the "something in the eye" got there from an emery wheel, or in chiseling stone, etc.—that is, if it flew in with great force—it may be best not to attempt to get it out; if possible the patient should at once be sent to the doctor. But nine-tenths of all foreign bodies in the eye, are "loose," not embedded, and they may generally be removed with ease, and without injuring the eye.

The first thing is to locate the speck. To do this it is necessary usually that some friend, shall be able to turn the upper lid inside out, or, as it is called, evert the lid. With a little deftness and care one may learn how to do this. First of all and in all cases before touching an eye, wash the hands thoroughly clean, scrubbing with a brush, and clean the nails perfectly. The nails should also be short and smooth and blunt. If the speck is on the cornea, it may be found or located by placing the patient in a good light

and examining the eye without noticing the lids, by looking at the cornea from different points of view, aided by telling the patient to look a little upward, downward, and to the sides. If it is not on the cornea, it may be inside the lower lid; to examine, have the patient look well upward, while you pull the lower lid downward by pressing downward on the skin below the lid. In every household and workshop should be kept some absorbent (or doctor's) cotton. Twist a little wisp of this cotton about the end and down along a smooth little stick or a match, and if the foreign body is inside the lower lid, delicately remove it by means of the wisp of cotton. If the speck is on the cornea, twist a wisp of the cotton into a firm roll one-fourth of an inch thick and two inches long; then double it, end to end, and twist it on itself, grasping the ends, and leaving a half inch of the curved doubled roll free to place against the eyeball. Have the patient look downward, the upper lid high up by pulling the eyebrow upward with the fingers of the other hand. Then gently and quickly place the cotton against the eyeball above the cornea. The eyeball will promptly roll upward beneath the upper lid, and almost always the speck will be caught in the twisted cotton fibers and be found there. If not successful at first, wait a few minutes and try again; perhaps a third time. If the speck still sticks in the cornea, send the patient to the doctor.

If the foreign body is not in the lower lid, or if it is not stuck upon or in the cornea, it must be looked for under the upper lid. To evert the upper lid, have the patient look

sharply and constantly downward; gently but firmly seize the eyelashes of the upper lid and draw the lid downward and outward a little; then place the finger or thumb of the other hand (*not* a stick!) above, and in the hollow below the eyebrow; there is thus formed a sort of brace against which the border of the lid is rolled over and backward. The foreign body, if present, is easily seen and brushed off with the wisp of cotton. After the speck has been removed the patient will persist in believing it still

there. The inflammation makes it long feel as badly as before. This redness or inflammation may be cured by a drop or two, several times a day, of the following:

Borozinc Lotion

Boric Acid.....	gr. xxx
Zinc Sulphate.....	gr. ii
Sodium Chlorid.....	gr. iii
Distilled Water.....	℥ iv

Tell the druggist to filter this twice. Keep a bottle of this "lotion for the eyes" in the house for use in the future. I shall often advise its use in the several articles that are to follow.

IV. DISEASES OF THE LIDS.

Many patients and their friends find it difficult or impossible to get the advice of expert oculist physicians. It is for such especially that the present series of articles is written. Luckily many of the inflammatory diseases of the eyes, at least in the beginning of the troubles, are of such a nature that they may be treated, prevented, or cured by intelligent care of the patients themselves or of parents and friends. But for a few diseases, the services of a doctor are absolutely necessary. Such diseases of the lids are these:

1. When the upper lid droops down, or hangs too low over the eyeball.
2. When the lid is turned in so that the lashes scrape against the eyeball and inflame it.
3. When the lower lid is turned out so that the tears run down upon the cheek, or are dammed up, causing unhealthy, unsightly, or dangerous conditions.
4. When the lid is stuck fast to the eyeball—the result of old inflammations, wounds, etc.
5. When the lid is greatly swollen, making vision with the eye impossible, and if pus or "discharge" also exists; or if there is a great dread of light; then something more than disease of the lid is present.
6. When there are fresh wounds, injuries, or burns, etc.

"SCALY," CRUSTY, SORE OR INFLAMED
LID EDGES

But suppose the edges of the lids are simply a little swollen, unhealthy,

crusty, or "scaly"—then home-treatment may, at least for a while, prove successful. In such conditions, put a drop of the borozinc lotion (described in a previous article) into each eye two or three times a day; and besides this, after bathing the eyes for a minute with quite hot water, rub carefully along the lid edges once a day, on going to bed, a tiny bit of the following:

OINTMENT FOR THE EYES

Yellow Oxid of Mercury.....	gr i
White Vaseline.....	℥ iii

This will generally cure the lid trouble, at least for a while. If in spite of this the lid edges again become unhealthy, it is probably due to lack of proper spectacles, which are needed to make the cure permanent. Do not forget that you can hardly ever get so correct spectacles from the jeweler, the optician, or the traveling spectacle seller. Even the doctor, even the oculist, even the professor or famous surgeon, may not give you the correct glasses. But you should keep trying to get them.

STYES

These bothersome things also generally signify that scientific spectacles only will finally and permanently cure the causes. But repeated attempts may be made with the Ointment for the Eyes above described, and with the Borozinc Lotion used in the same way as for inflamed lid edges.

THE N. S. C. FELLOWSHIP

By H. H. Whetzel

Professor of Plant Pathology



ERRETT WALLACE, M. S. A.

THE frequent injury to fruit and foliage resulting from the use of Bordeaux mixture has for several years emphasized the necessity for a new fungicide. During the winter of 1908-9, there was an imperative demand on the part of the fruit growers of this state for definite information as to the fungicidal value of Commercial Lime Sulphur when used as a summer spray.

The companies manufacturing these solutions were quick to recognize the opportunity and recommended their goods for this purpose, at the same time presenting little or no satisfactory evidence in support of their claims.

The writer contends that it is the duty of these concerns rather than of the state to provide accurate and reliable information as to the use and value of their goods. The Niagara Sprayer Co., of Middleport, N. Y., recognizing the justice of this contention, has during the past summer provided for a thorough and scientific investigation of the whole subject by establishing an industrial fellowship

for this purpose in the Department of Plant Pathology of this College. The text of the foundation of this fellowship is as follows:

For the purpose of promoting useful knowledge, the State College of Agriculture at Cornell University accepts from the Niagara Sprayer Company of Middleport, N. Y., the foundation of a Temporary Industrial Fellowship to be known as the Niagara Sprayer Company Fellowship.

It is mutually understood that the conditions governing this fellowship shall be as follows:

The exclusive purpose of this fellowship is the investigation of the fungicidal value of lime sulphur mixtures as applied to the control of diseases in plants, to the furtherance of which the holder shall give his whole time and attention, with the exception of three hours a week through the University year, which time he shall give to the work of instruction in the Department of Plant Pathology.

The fellow shall be recommended to Executive Committee by the Director of the College, the head of the Department of Plant Pathology and his next highest associate; he shall be a man who has shown research ability; he shall have been connected with the University, and shall pay all regular fees required in his course, with the exception of fees for laboratory supplies, for which his instruction shall be taken in lieu, unless in the opinion of the appointers his demands become excessive, in which case the donor shall be expected to reimburse the Department; he shall work under the advice and direction of the Professor of Plant Pathology or his associate; and he shall forward periodically through the Professor of Plant Pathology, reports of his work to the Niagara Sprayer Co.

The fellow shall spend at least eleven months of the year in the

actual work of investigation, being allowed one month vacation, which shall be taken at that time of the year which will least interfere with the progress of this work. During the summer months, from June 1st to October 1st, the work of investigation shall be carried on in a field laboratory located in some section of the State of New York, which shall in the opinion of the Professor of Plant Pathology, be most suitable for carrying on the investigation work. The equipment for this field laboratory shall be provided by the Department of Plant Pathology with the exception of such spraying apparatus and materials as may be necessary for carrying on the experiments in the field. Such apparatus and materials shall be supplied by the donor, who shall also bear all expenses for lease and labor required for a proper carrying out of the experimental and demonstration work. The company shall also pay all traveling expenses, both for the fellow and head of the Department of Plant Pathology incurred in carrying on and overseeing the investigation, but such expenses shall not in any one year exceed \$500.00.

For the support of this fellowship, which shall extend through a period of two years, the Niagara Sprayer Company agrees to pay \$1,000.00 per year to the College of Agriculture in semi-annual payments of (\$500) five hundred dollars each, beginning July, 1909. This sum shall be paid by the College of Agriculture in monthly installments to the holder of the fellowship.

It is understood and agreed that the Niagara Sprayer Company may discontinue this fellowship and all payments which they agree to make on account of same, at the expiration of one year, provided they give notice to the College of Agriculture and holder of the fellowship, not later than March 1st, 1910, and the College of Agriculture has like option of terminating said fellowship upon notice to the Niagara Sprayer Company and holder of the fellowship on or before March 1st, 1910.

It is understood and agreed that any matters based on the work done by the fellow and to be published by the company shall first receive the approval of the fellow and head of the department of Plant Pathology. It is also understood and agreed that during the tenure of this fellowship, the holder thereof shall not publish any results of his investigations except with the consent and approval of the Director of the College of Agriculture and the Professor of Plant Pathology, and that at the expiration of the fellowship, the holder thereof shall have completed a comprehensive monograph on the subject of his research, containing both what he and others have been able to discover. A copy of the monograph shall be forwarded to the Niagara Sprayer Company, and a copy shall be signed and placed in the library of the College of Agriculture. Any part or all of this monograph shall at once be available for publication by the college of Agriculture, if it so desires, or it may be published elsewhere under conditions satisfactory to the fellow and the Professor of Plant Pathology, under whose direction the work has been done, *full credit being given in every case to the Niagara Sprayer Company, through whose benefaction the work has been made possible.*

It is further understood and agreed that this fellowship may be discontinued at any time at the option of the Director of the College of Agriculture in case in his judgment, a competent and suitable person cannot be found to do the work, in which case any unexpended balance of funds advanced by the Niagara Sprayer Company shall be refunded to them.

IN WITNESS WHEREOF, the respective parties have hereunto set their hands and seals the 31st day of July, 1909.

NIAGARA SPRAYER COMPANY
By THEO. DOSCH, General Manager.

CORNELL UNIVERSITY
By E. L. WILLIAMS, Treasurer.
ERRETT WALLACE, Fellow.

Approved:

L. H. Bailey, *Director of New York State College of Agriculture.*

H. H. Whetzel, *Professor of Plant Pathology.*

By the terms of this fellowship the College of Agriculture is free to make an unbiased investigation of the entire problem for the benefit of the whole people. It may publish any or all results obtained whether favorable or unfavorable to the company. The investigations are to be conducted in the orchard of some grower in the state and are open to the visiting public at any and all times.

Mr. Errett Wallace, Cornell, B.S.A., '08, and M.S.A., '09, has been appointed to this Fellowship and is now in charge of these investigations. Mr. Wallace has shown marked ability as an investigator. His work on the Bulb Rots of *Gladiolus*, presented as a thesis for the Master's degree, is practically the first contribution to our knowledge of the diseases of this ornamental.

His work on the fungicidal value of Lime Sulphur was begun early in the spring in our Field Laboratory on the farm of L. B. Frear, near Ithaca. The results of the first season's work on Peach Leaf Curl, Apple Scab and Brown Rot of Peaches, indicate a wide field of usefulness for the lime sulphur solutions and promise to establish its value as a substitute for Bordeaux mixture, for the control of many plant diseases. Mr. Wallace brings to his work broad fundamental training, a

good special training and ability along the lines of Plant Pathology. His careful, painstaking and conservative attitude toward his work, together with his keen insight into the problems presented and his scientific honesty in drawing conclusions from the data obtained, insures to the growers of the state, results and recommendations on which they may depend.

The writer believes this is the first industrial fellowship ever established for investigations along the lines of Plant Pathology. It is certainly the first industrial fellowship of any kind ever established at Cornell University. It is hoped that this is but the first of a number of such fellowships to come to the Department. For over two years growers of various crops in different parts of the state have been cooperating in a financial way with the departments for the investigation of the diseases of their crops. The establishment of fellowships in the college which shall provide for a thorough investigation of a single disease or the diseases of a single crop, means more definite information and quicker results to the grower. It also insures his personal attention to the investigation and results obtained, for where his money is, there, also is his interest. It is hoped that the foundation of this fellowship marks a new type of cooperation between the department of Plant Pathology and the growers of the state which shall rapidly result in the solution of our most pressing plant disease problems.

THE RURAL TELEPHONE—WHAT IT HAS ALREADY DONE FOR THE COUNTRY POPULATION

By Charles L. Mulligan, '07

"**H**OW can the life of the farm family be made freer from drudgery, more comfortable, happier and more attractive?" asks Mr. Roosevelt.

"How can life on the farm be kept on the highest level, and, where it is

not already on that level, be so improved, dignified and brightened as to awaken and keep alive the pride and loyalty of the farmer's boys and girls, of the farmer's wife, and of the farmer himself?



HOW THE TELEPHONE ENHANCES A LONESOME SITE

"How can the desire to live on the farm be aroused in the children who are born on the farm?"

These must be important questions. A big commercial company features them at the very top of its display advertisements in high-class magazines. And since more people are attracted by the magazine ads than by a special message to Congress, it's not such a bad way of driving home a real, live thought.

The advertiser in this case doesn't go so far as to state that the pump he manufactures is the panacea for the country's ills which so troubled the great ex-President. Instead, he states his remedy in four words: Increase the Farmer's Self-respect. Then he leads up gracefully and gradually to his pump.

To increase the self-respect of the farmer, that's a problem that is, actuating the movements of a great many people and of numerous and diversified interests in these days. "Keep the boy on the farm" is the

slogan of all who view with alarm any exodus of farm-bred youths away from rural districts to cities or any attempt to fill their places with helpers trained to city ways or perhaps not trained at all. Roosevelt wrote in this connection:

"If there is one lesson taught by history, it is that the permanent greatness of any state must depend more upon its country population than upon anything else. No growth of cities, no growth of wealth can make up for a loss in either the number or character of the farming population."

Roughly speaking, one may concede to the city the advantage of convenience, and to the rural sections the advantage of freedom. Yet is there any real reason why farms should not have conveniences—modern improvements, public utilities, better opportunities for business and social life? The city people can't get the pure air and the wholesome, outdoor existence of their country cousins. But public utilities can be brought to the farms,

and agricultural America already has found that with a little enterprise to boast it along life in the country has some big advantages, after all.

The extension of public utilities to country homes has done more than any other one thing, perhaps, to enhance the pleasure and convenience of life in the country. Notable among these may be mentioned the extension of steam railroad lines and long-distance trolleys, the good roads movement, the rural free delivery bringing with it the daily paper, and the rural telephone. The two greatest, because they reach the most people, are the R. F. D. and the telephone.

Testifying before the Country Life Commission, C. H. Starkweather, Jr., an expert of the Western Electric Company, which has developed farm telephone apparatus and has equipped many lines throughout the country, called the telephone "the farmer's greatest servant." Among other things he said:

"Good roads, rural free delivery and the rural telephone as benefits to the farmer, can hardly in equity be compared, as they are not in competition with each other. Good roads have always been a benefit. Rural free delivery from its start in 1897, has been a great help to the farmers,

and in eleven years, according to the report of the auditor for the Postoffice Department, has grown to a total of 40,000 carriers. But the rural telephone, starting since that time, is already outstripping both of these in the number of farmers it is reaching and the ways in which it is benefiting them.

"The rural free delivery carrier's route rarely exceeds 24 miles in length and serves on an average about seventy farms. A rural telephone will operate as far as 40 miles with as many as 30 or 40 telephones on the line. Of course in the well settled States the farmers have both, but in the vast sections of open country, it is obvious that it will be some time before rural free delivery can reach as many farms as the rural telephone."

Statistics that have been gathered from telephone companies all over the country by the federal census-takers tell the interesting story of the growth of the rural telephone. This development has all been within recent years as the figures show. A census of rural telephones was taken for December 31, 1907. With these statistics is used, for purposes of contract, a census taken five years earlier. Some of the more important totals may be tabulated as follows:

	No. of farms (Census 1900)	Rural Telephone Stations		Per cent. of farms with telephones		Per cent. increase in 5 yrs.
		1902	1907	1902	1907	
United States.....	5,535,611	266,966	1,464,773	4.8	26.5	449
North Atlantic States...	666,832	18,706	164,932	2.8	24.7	771
South Atlantic.....	931,053	11,268	64,149	1.2	6.9	469
North Central.....	2,120,726	226,606	1,057,043	10.7	49.8	366
South Central.....	1,586,829	7,829	115,905	0.5	7.3	367.5
Western.....	229,904	2,559	62,774	1.1	27.3	2350

The showing of the middle west in these figures is remarkable. Iowa in 1907, had 174,155 rural telephones—78.9 per cent. of its farms were "on the wire." The census shows that though there are comparatively few rural telephones in the far west the movement there is spreading in a manner truly western. It is in the

south that the telephones are comparatively few. In the south and west the missionary efforts of telephone boosters are now being exerted. It is likely that the next telephone census will show increases in different directions. Some reports from down south, where the real efforts to "increase the farmer's self-respect" are

now being centered, seem to bear this out.

In Hancock County, Georgia, a movement has been launched to put telephone service into every farmhouse. The merchants of the county seat, Sparta, realizing that theirs will be the advantage if every farmer can get into communication with town at a moment's notice, are contributing part of the expense to make the thing a success. Here is the real sort of co-operation, and townsmen and countrymen are said to be entering into the movement with enthusiasm.

A farm with telephone service into other farms and into villages and towns, with perhaps toll-line extensions into the systems which reach so many millions of subscribers throughout the country, is a very different place from a farm which hasn't any telephone. Distance, the bugbear of country life, is annihilated if the telephone wires lead into the house. A neighbor ten miles down the road is just as handy as if he were on the other side of some busy city street. Business opportunities are better, social advantages are more often at hand, when there's a telephone around the place.

Take for instance the marketing question. Nearly every farmer raises cattle, grain, hay or something else salable. It's up to him to learn when prices are at their best. The market fluctuates; to get the best of a bargain a man must know just when to sell. It used to be the rule for farmers to drive into town with their produce. Their only enlightenment concerning the market came from hearsay or some roundabout rumor. Now, before hauling into market the farmer can get first-hand, immediate information over his wire. He won't find himself compelled to sell at a sacrifice or haul back home if the price has dropped.

It is interesting to note the good accomplished by the telephone when a doctor, a veterinary, or some good neighbors to help fight a fire, are wanted and wanted in a hurry. The value of the telephone in cases like this can't be expressed in terms of money.

Then there's the sociability aspect of the telephone. "Good mornings" are exchanged all the way across the county; invitations are given and parties planned; the latest choice bit of

(Concluded on page 33.)



GETTING AT THE RURAL SUBSCRIBER IN THE ROCKY MOUNTAINS. PINE FOREST CUT THROUGH FOR TELEPHONE LINES.

The Cornell Countryman

N. R. PEET, Editor

W. Y. RUMSEY	- - -	Alumni News Editor
R. D. ANTHONY	}	Associate Editors
S. G. JUDD		
A. M. KRUSE		
W. G. STEPHENSON		
R. J. SHEPARD	- - -	Business Manager
T. BRADLEE	}	Assistant Managers
C. F. RIBSAM		

OCTOBER, 1909

Greeting and "One Word"

Another summer's vacation is over. To some it has meant a good time; we greet you, and trust that the remembrance of that pleasant time will serve not as a cause for absent-mindedness or dreaming, but rather as an incentive to concentration and industry, for it is only those who earn a good time who deserve to, and really do, enjoy one.

To others it has meant hard work; we greet you, and hope that the thought of it will not engender a determination to have a so-called good time now and to have it as quick and as long as possible; but rather that it will leave a more sensible knowledge of what hard work means, a better appreciation of the benefits of an education; and that it will instill withal a firm ambition to make the most of our advantages here.

Upperclassmen! we greet you. Upon you will rest the responsibility

of perpetuating the Agricultural College spirit, for it is you and you only who understand that spirit and realize what it stands for and accomplishes. There is no need of giving an exposition of it here; you understand it all right because it is a part of you. See that the underclassmen come into a proper understanding of it.

Underclassmen! we greet you, although some of you, the freshmen, we do not as yet know. But we presume you will not be much different from other freshman classes. You have probably been loaded down with advice; you will be responsible for adapting it to your conditions. You may be tempted to throw it all to the four winds. But before you do, remember that, although you are seemingly away from all restraining influences, you are being watched. Watched more, probably, than freshmen in any other college. Country folk want to know whether this sort of an education is worth while or not. They need proof of longer standing and of a more personal nature than any other class of people. Many of them are not convinced as yet. You may find it smoother sailing if you respect their doubts and begin setting about to disprove them. And now it is time to "get busy." May we have a happy and successful year!

Plans and Forewords

The observant readers will notice that this issue of THE COUNTRYMAN contains several articles directed in some way at the subject of irrigation. Attention is called to this fact, partly to explain such a departure from a custom established by six years of

precedent, and partly as an excuse for disclosing one of our plans for the coming year.

It has been the custom, though not the stated policy, of *THE COUNTRYMAN* to have each issue a more or less evenly balanced one; that is, without an appreciable emphasis on any one topic at the expense of any other. It has tried to give each of the several parts of agriculture, dairy, poultry, animal industry, horticulture, farm crops, farm machinery, etc., equal attention.

But this year's board feels that there are several topics which are of vital importance to agriculture and that these topics can be discussed more effectually by devoting to each one a separate issue than by wearing out each topic with separate, disjointed articles one at a time in several succeeding issues. The idea of our plan is to concentrate in one issue several articles on one topic from several points of view. We believe that in this way our readers may more certainly deduct an intelligent opinion than as if, for instance, we first enthusiastically boomed spray irrigation and then in a succeeding issue portrayed the benefits of a ditch system.

This then is our excuse for devoting the October issue to irrigation. We hope to use this same excuse for devoting succeeding issues to Drainage, Cooperation, Fertilization, Forestry, etc.

It is not our plan however to exclude from these special numbers all articles which are foreign to the special topic. We are primarily a students' paper and intend to run articles by students; if such articles are good, are pithy and alive, they will find a place in our columns although they

may not even be aimed at the subject being emphasized. We are the official organ of The Students' Association of the New York State College of Agriculture and of the Experimenters' Leagues. We shall try to represent them, whatever; and we have quite a suspicion that the importance of such a task will keep growing as the organizations become more perfected.

Another plan, and the last one we are going to expose, the Farm Health series, which had such a successful run last year, is to be extended. We are congratulating ourselves that it has been possible for us to secure as a starter in this connection, a series which opens in this issue on "The Care of the Eyes," by Dr. Geo. M. Gould of Ithaca.

Dean Bailey and the Directorship

There is a University rule that each full professor is allowed to spend one year in seven away from the University. This allowance is responsible for the fact that we are not to have Dean Bailey with us this year; that we are not to have that wealth of ideas, and that inspiring, healthy enthusiasm which are so characteristic of "Our Dean." We will miss you, Dean Bailey; we will miss the counsel which you give so willingly when sought, and which is prized so highly, for never has it been found poor or even mediocre; we will miss the return of the determined "I will," which is certain to accompany each new contact with your personality. We will miss you too on the return of those much anticipated occasions we are pleased to call assemblies. Indeed! where won't we miss you?

But we are glad that Dean Bailey's position is not to be left vacant, that our college is still to have a head and we, the student body, a leader. Dr. Webber, we greet you as our acting dean. You may find that this position does not always insure smooth sailing at all times, but we feel that you have been with us long enough to know that it is backed somewhat solidly by the students. We trust that you may always find us, the student body, ready to give you our heartiest cooperation and support. We feel sure that such confidence, once bestowed, will not have to be shifted nor withdrawn.

The Irrigation Congress

The National Irrigation Congress is an annual affair. In 1910, the eighteenth session is to be held at Pueblo, Colorado. A place has not been decided upon for the 1911 meeting, but we understand that Rochester, N. Y. has asked for it and seems in a fair way of getting it, although nothing will be decided until the meeting in Pueblo.

There are several reasons why the Congress should come east. Among the foremost is the fact that the West lacks the capital and political prestige which are so necessary to further the

irrigation systems already started, to say nothing of the untouched schemes which look immensely practicable.

Another reason is that the East needs irrigation. There can be no doubt about it in the minds of those who have investigated it. The East lacks the enterprise, may we say the nerve?, to start any sizable irrigation project. The East needs the Congress, the presence of the western brothers to inspire them.

Then there is so much to be said about irrigation; questions as to practicability, possibility, advantages, disadvantages, and when these have been satisfactorily disposed of, there will come the questions on means, manners, systems, etc. The East needs the Congress for information.

We feel that the time will be ripe for an eastern congress in 1911. The several irrigation experiments in this section will have had a fair trial; eastern markets will have tasted more keenly the sharp competition with western irrigated products; while on the otherside, western capital will be pretty well tied up; western managers will want eastern skilled labor, eastern utilities and eastern brains to develop more efficient machinery.

May 1911 come speedily and bring with it the 19th National Irrigation Congress to the East.

*The Rural Telephone—What It Has
Already Done for the Country
Population*

(Concluded from page 29).

village gossip becomes everybody's property in five minutes instead of waiting a round of visits. The young people on the farm find it a great thing, and it makes them more contented to stay where they are.

Telephone-building in crowded city districts is always attended by a number of difficulties. It won't do to string too many wires in the air; if the lines go underground there is a lot of bother about cables, conduits and rights of way. When farmers want to construct a line they cut their own poles and do the work of installing the lines themselves. The cheaper rural lines ground their circuits, and only a single wire need be used. The co-operative plan is often employed in starting telephone service. Many a prosperous operating company of today sprang from a group of farmers who bought a few dozen instruments and a little switchboard and announced themselves ready to do business with their neighbors.

Here is the way one of these "promoters" described it in a letter to his favorite agricultural paper:

"You want to know how we organized the rural system? Every telephone exchange in this county, with possibly one exception is an independent exchange, owned by an individual, or individuals, as an investment. We have no co-operative exchanges, but we have hundreds of rural lines built on the co-operative plan. For instance, a farmer living eight miles from town buys a switchboard and puts it in a room of his residence. He then runs a line to town and connects with the town exchange (free, on exchange basis). He then next proposes to give his neighbors telephone service at 50 or 75 cents a month, if they will build their own lines to his switchboard and buy their own 'phones. Then several farmers along a road go to work and buy a co-operative line, dividing the expense

equally. In this way there is no company to organize, unless you call the farmers who go in together and build a party line a company.

Witness the difficulties the Colorado Telephone Company overcame in branching out through wilds and over canyons to reach its most remote subscribers. The hazards of railroading are shared by the telephone people in many parts of the country.

Yes, it is working wonders with the rural population, this telephone. The farmers to be found in the middle west today—the big wheat and corn country, as well as the big telephone country—are not the hayseeds that one sees in comic papers and on the stage. George Ade, in describing the Taft rally held on his Indiana farm last season—they were all farmers and his neighbors attending, mentions in passing that "150 automobiles were tucked away in his orchard."

There was a satire on the prosperous farmer not long ago in the financial notes of a big New York daily. Here's what it said:

"Putting down his Haviland breakfast coffee cup and folding his linen napkin, the farmer takes up the telephone extension and calls his neighbor. 'Is that you, John? Well, John in the pit gossip of your Chicago paper you will see that the croppers have started this way again. Yes, Patten's man and two others. One of them ought to be in this morning. I'll run over to the station in my car to see if I can pick him up, I'll bring him back through the meadow road so that he can see that poor wheat over there on Henry's place. Then I'll turn him over to you. Show him the worst wheat you've got, understand? Yes, that's it. Pass him on to Jackson. He hasn't any wheat worth looking at. Telephone on down the line. Goodby—Oh, say, John! That one cylinder car I told you about is a marvel. Oh, forty miles. Be as pessimistic as you can. There's a cropper out from New York who represents a bear house. He is coming to find the wheat. I'll look out for him at this end. Goodby."

¶ Rather a revolutionary conception of a farmer, isn't it? Yet that's the way a great many city people have begun to look at him, now that stock

markets and automobiles and telephones have lifted him out of the pioneer stage into a realization of the power he holds.

GENERAL AGRICULTURAL NEWS

Ren. H. Rice, secretary-manager of the National Apple Show, Inc., announces that the single judge system will be carried out in making awards at the second exposition in Spokane, Wash., November 15 to 20, when prizes and premiums of a total value of \$25,000 will be distributed in 20 classes, free and open to the world, ranging from a full carload to a single plate. The chief prize is \$1,500 in gold in the sweepstakes for carloads of commercial winter apples, which carries with it the championship of the world and the title of quality apple king of America.

It is also officially announced that in awarding prizes on all commercial exhibits, unless otherwise provided, the judges will be governed by the rules and scoring points adopted by the American Pomological Society. No protest will be allowed. Professor H. E. Van Deman of Ferriday, La., secured as chief judge, advocates recognizing the commercial points of fruit, and in this he considers that the chief points should have the same relative values, as follows: Quality, 20; color, 20; condition, 20; pack, 20 uniformity, 10; size, 10; total, 100.

"Professor Van Deman will have a meeting with the associate judges before they begin their work," said Mr. Rice, "and he will suggest the foregoing score card on commercial exhibits.

"With reference to values of varieties, in which the rules and scoring points of the American Pomological Society also apply, it may be stated that a number of varieties, which have since been brought to a high state of perfection, are scored low, but this probably will be overcome by a liberal construction of the regulations by the judges."

THE fourth annual National Dairy Show will be held at Milwaukee, Wis., October 14th to 24th, 1909. This show is an exposition of the dairy industry and the many branches related to and dependent on it. Few of those engaged in any one branch of the industry realize how many others there are.

Speaking briefly, we have the dairy farmer who makes butter at home; the man who distributes the milk he produces to town or village customers, the man who delivers to the creamery, cheese factory, condensing factory, or ships to the city dealer. There is the creamery buttermaker, the ice cream maker and the makers of the many kinds of cheese, some eight or ten of which are very common, while the less common ones number many more. Then there are the manufacturers of all classes of machinery; churns, cream vats, milk testers and ice cream freezers.

No branch of the dairy industry has developed faster than the ice cream business in the last ten years, unless perchance it is the milk handling business. In both of these branches there has developed organizations doing an immense business with the increased economy that comes by such organization. Our large cities have companies running from fifty to four hundred wagons distributing milk to the retail consumer.

The milking machine is a new aspirant for public attention. Many are using it with success. The feed and litter carrier, the gasoline engines and separators, have changed the appearance of the ordinary barn. Today the dairymen's problem is one of the application of business principles, i. e.: exact knowledge of cost of production with its accompanying

reduction in cost, of concentration and organization. Recognizing this, the dairy show will have a model dairy herd at work and instructors to show just how the daily cost of milk production is being determined. The manufacturers of all classes of machinery referred to above will be on hand. It is reported that at the last dairy show sales of from \$20,000.00 to \$40,000.00 were made during the period of the dairy show to visitors, which explains the reason why the supply men can afford to make exhibits.

A national dairy exposition is not complete without the show of products. The National Creamery Buttermaker's Association will have charge of the creamery butter exhibit. There will also be a display of all kinds of products such as the many varieties of cheese, market milk, cream, etc. A notable feature of this year's show will be the number and variety of conventions held during the week. They include the National Creamery Buttermakers' Association, The International Milk Dealers' Association, The Railway Freight Ass'n., Official Dairy Instructors' Association, The National Association of Ice Cream Manufacturers, and others.

A students' judging contest, lectures on dairy cow selection, and a working creamery will be part of the educational work. The young man who is educating himself for any place in the dairy world can well afford to make considerable sacrifice in order to spend a few days at an exposition of this kind.

CAMPUS NOTES

At the National Dairy Show to be held at Milwaukee, some time in November, there will be a student's judging contest. A special class for preparation for this contest will be organized immediately upon the opening of the term and a team of three men will be selected by competition.

* * *

A new building to be used as a clubhouse for the Telluride Association is

in process of construction on the south side of West Avenue, just north of the Delta Upsilon fraternity house. The house will be three stories high above basement and is to be built of yellow brick and stone. It will be used as a home for the members of this association doing graduate and undergraduate work in engineering.

Telluride Association is a western commercial organization doing work in this country and in foreign countries.

* * *

A valuable telescope was stolen this summer from the field station of the Department of Limnology which is located in the marshes near the mouth of Fall Creek. Professor Needham, in reporting the theft to the police, said that other burglaries had been committed recently.

* * *

A portrait of the late Professor George Chapman Caldwell, painted by Professor O. M. Brauner, was presented to the university this summer. The ceremony took place in the auditorium of Goldwin Smith Hall. There were appropriate speeches by Dr. Andrew D. White and Dean Crane. Professor Caldwell while connected with Cornell University was Professor of Agricultural Chemistry.

* * *

Under "Faculty Promotions," in the *Alumni News* for June 23d, we notice following promotions in the College of Agriculture:

G. W. Cavanaugh, professor of chemistry in its relations to agriculture in the New York State College of Agriculture, promoted from an assistant professorship.

H. H. Whetzel, professor of plant pathology in the New York State College of Agriculture, promoted from an assistant professorship.

E. O. Fippin, professor of soil technology in the New York State College of Agriculture, promoted from an assistant professorship.

G. F. Warren, professor of farm management and farm crops in the New York State College of Agriculture, promoted from an assistant professorship.

W. A. Stocking, jr., professor of dairy industry in the New York State College of Agriculture, promoted from an assistant professorship.

G. N. Lauman, professor of rural economy in the New York State College of Agriculture, promoted from an assistant professorship.

One new appointment was made in the College of Agriculture, namely: that of G. W. Herrick, assistant professor of economic entomology in the New York State College of Agriculture and assistant entomologist of the experiment station, to fill the position rendered vacant by the death of the late Professor M. V. Slingerland. Mr. Herrick is a graduate of Cornell University in the class of 1896.

* * *

The intercollege athletic championship of Cornell University for 1908-09, was won by the College of Civil Engineering which receives as a trophy a handsome banner presented by Junius T. Auerbach, '90, of Boston. Score in points for year was as follows: Civil Engineering, 49; Sibley, 40; Arts, 34; Agriculture, 33; Law, 30; Veterinary, 17; and Architecture, 14.

* * *

Governor Hughes has appointed five men as members of the University Board of Trustees, namely: Frederick C. Stevens, Henry W. Sackett, Almon R. Eastman, Thomas B. Wilson and John N. Carlisle. Of these Mr. Eastman and Mr. Wilson are particularly well known to the students of the College of Agriculture.

* * *

A. R. Mann, secretary of the New York State College of Agriculture has this summer built a residence on Dryden Road. Mr. Mann recently moved into his new home.

* * *

We noticed in the *Alumni News* for June 30th, an interesting editorial on the research work in Limnology which is being carried on by Prof. J. G. Needham and his assistants.

* * *

Professor John Craig was one of the speakers at the National Conservation Congress held at Seattle during the month of August.

Numerous improvements have been made at Percy Field this summer. About \$3,000 has been expended. A new heating plant and new plumbing have been installed in the clubhouse. The steel stand and freshman bleachers have also been repaired.

* * *

Dr. V. A. Moore, Director of the State Veterinary College, spent several weeks this summer in Denmark, Germany, and England. He was investigating European methods of controlling diseases of cattle.

* * *

A sabbatic leave of absence for the year, 1909-10 has been granted to Professor L. H. Bailey, director of the College of Agriculture, and Professor Herbert John Webber has been appointed acting director of the college to serve during Dean Bailey's absence. Dean Bailey has not announced his plans for the year of his absence.

* * *

Near the intersection of Sage and Central avenues the United States Weather Bureau has erected a kiosk of iron and glass for the permanent exhibition of instruments used in meteorology. It is a structure about nine feet high and five feet square. It contains a rain gauge, a maximum and minimum thermometer, a thermograph and a hygrometer. The weekly bulletins of the bureau and the daily weather map are also to be posted there.

* * *

Among the speakers at the annual meeting of the Society for Horticultural Science, in St. Catharines, Canada, in the middle of September, were Director L. H. Bailey and Professor H. J. Webber.

* * *

A new road is being built, starting near the junction of South and Garden avenues and running eastward around the brow of Kite Hill and along the southern boundary of Alumni Field.

* * *

Mr. M. P. Jones, B. S. A., '07, who has been for the past year instructor in Public Speaking and assistant in

the Extension Department, was taken very dangerously ill with hemorrhage of the lungs while teaching in the summer school at Chautauqua Lake. We are glad to hear that Mr. Jones is much better now. He does not expect to return, however, to take up his former position, in which case his place will be taken by Mr. R. J. Shepard, '10, of Batavia, N. Y.

* * *

It may be of interest to some of our readers to note the latest departure of the Extension department. We understand that Prof. C. H. Tuck acted as judge in the baby contest at the Tompkins County fair recently. We are told that Mrs. Noble of Endfield, helped but that "Charlie" insisted on holding the candidates, one at a time of course, as they were being passed upon. The contest was very successful as the *judge* was finally able to decide upon one.

FORMER STUDENTS

'06, Ph.D.—Martin Joshua Irons, horticulturist in the Government Agricultural Experiment Station died in San Juan, Porto Rico, on May 17, of typhoid fever. He was born on May 18, 1867. After graduating from Cornell College, Iowa, in the class of 1892, he taught for several years and took post-graduate work in the University of Chicago. In the fall of 1904, he entered Cornell University to take up the study of agriculture, chemistry and geology, securing his Ph.D. degree in 1906. During his course in Cornell, he sang in the first Agricultural quartette. At the time of his death, his home was at Fort Worth, Texas.

'01, B.S.A., '02, M.S.A.—E. J. Kyle, Professor of Horticulture in the Texas Agricultural and Mechanical Institute has met with rapid advancement in his chosen vocation and has found time to give his valuable attention to other interests as well. Having completed his early training in the public

schools and a private school in Kyle, at the age of twenty, he entered the Agricultural and Mechanical College in the fall of '96 and graduated from the Horticultural course in June, '99. In the fall of the same year he entered Cornell and took his B.S.A. degree in 1901. Immediately after securing his M.S.A. degree in June, 1902, Professor Kyle was elected to the position of Instructor in Horticulture in A. & M. College of Texas, and assumed entire charge of the Department of Horticulture. During the first five years of



EDWARD JACKSON KYLE.

his connection with this college, promotion came every year, culminating in a full professorship in 1907.

Though Professor Kyle's promotion was rapid and must have been secured only by a close devotion to his work, he nevertheless had time to give to institute work and other interests tending to improve the general agricultural conditions of Texas. Commencing in the winter of 1903, he was the first to agitate the movement for the teaching of agriculture in the public schools and by means of a great

many public addresses he was able to arouse considerable public sentiment. How effective this campaign was may be judged by the fact that today, the teaching of agriculture in the public schools is required by law. Besides all this, Professor Kyle has been able to aid Horticulture in general. He has given freely of his time and assistance to institute work in every section of the state. This man went back to his native state where he conducted his work along such broad lines that his influence for good has been widespread and far reaching.

'Ex 94.—L. A. Peters is located at Pasco, Wash., where he is in charge of the 317 acre farm of the Pasco Orchard Co. At present, they have 25 acres devoted to three year peaches and apples, 40 acres in alfalfa with the balance to be put into fruit as soon as possible.

'02, Sp.—Harrison Sheldon William and Miss Sarah Emma Kissam, Home Economics Winter '09, were married on Wednesday the twenty-eighth of April, 1909, at Mineola, New York. Mr. and Mrs. Williams are at home in Blairstown, New Jersey.

'04, W.A.—Fred Bradt of Hillsboro, Ore., writes that he recently met with a serious accident, being attacked by a bull which he was leading from the paddock to the barn. Besides a broken collar bone, he sustained external and internal injuries. We are glad to report a rapid improvement in Mr. Bradt's condition and that he expects soon to return to his home at Slingerlands, this state, having decided, as he says, that the Empire State is good enough for him.

'06, B.S.A.—W. G. Brierley is now assistant horticulturist in the Washington State College under Professor Walter S. Thornber, '05. He has in his charge the picking, packing, storing, and marketing of all fruits. Mr. Brierley's address is 1704 A Street, Pullman, Washington.

'06, B. S. A.—Charles F. Shaw was married on June 19 at the Reformed Church in Centre Hall, Pa., to Miss Helen S. Hosterman, daughter of Dr. and Mrs. G. W. Hosterman of Centre

Hall. Among the ushers were Ora Lee, Jr., '06, Milton P. Jones, '08, Lowell B. Gable, '06, and John H. Barron, '06. Mr. and Mrs. Shaw will be at home after September 20 at State College, Pa.

'06, W. D.—D. R. Nettleton is creameryman for the Woodcrest Farm at Rifton, Ulster County, N. Y.

'06, W. D.—C. D. Gaylord is milk-testing, he has been for two months at the Woodcrest farm, Rifton, N. Y.

'06, W. A.—Claude S. Smith, who is working with his father on their farms near Lodi, N. Y., was married on March third to Miss Harriet Howell of Lodi.

'07, B. S. A.—John B. Shephard, formerly manager of an onion farm at Breeze Hill, N. Y., has gone to San Marcos, (near Austin) Texas, where he is in charge of a farm. As soon as Mr. Shephard has the farm properly irrigated, he will develop it into a general farm for the raising of truck, fruit and alfalfa.

'07, B. S. A.—Gordon D. Cooper is with the Brown Brothers Company, nurserymen, at Browns, Nurseries, Ontario, Canada.—*Cornell Alumni News*.

'07, B. S. A.—W. J. Morse is an assistant in the division of Agrostology of the United States Department of Agriculture. His present address is Rosslyn, Va.

'07, B. S. A.—C. F. Kinman is first assistant in the Department of Agriculture Experiment Station at Santiago de la Cienfuegos, Cuba.

'07, Sp.—Orrin F. Ross has recently gone into co-partnership with his father and brother. He has since been acting as manager of their home farm. He is building a set of new sanitary stables for a special dairy farm.

'08, Ph. D.—G. D. Schæfer is in Lansing, Michigan, investigating, under the Adam's act, the effect of insecticides on insects.

'08, B. S. A.—L. A. Niven is in Anway, Arkansas, teaching agriculture in the State Normal School having charge of an 80 acre farm.

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THE CORNELL COUNTRYMAN

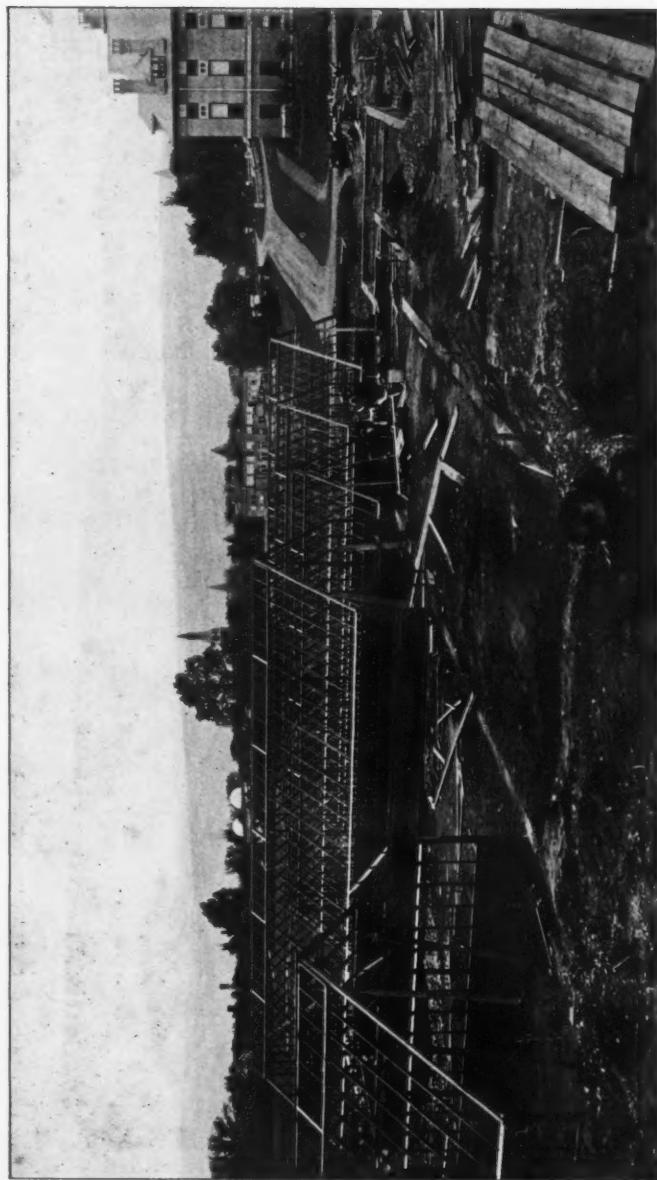
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THE BEGINNINGS OF THE NEW \$27,000 GREENHOUSES AT THE NEW YORK STATE COLLEGE OF AGRICULTURE.
(See page 56.)